The Ultimate Commercial HVAC

PLANNED MAINTENANCE CHECKLIST

Midwest Mechanical
Building Efficiency and Sustainability

A Service Logic Company

Table of Contents

Introduction 3

The Business Case for Planned HVAC Maintenance 4

Seasonal Inspections for Planned HVAC Maintenance 5

What is Involved in a Visual Inspection? 6

What is Involved in Testing and Evaluating HVAC Components? 7

Introduction

Every time you make a large purchase - a home, a car, a new appliance - it comes with a host of manufacturer's instructions and best practices designed to help you get the very most out of your investment.

Often, this includes a maintenance schedule that outlines what parts need to be routinely inspected, cleaned, or replaced to keep your new item functioning properly. In theory, following the maintenance schedule outlined by the manufacturer or builder, maintains the value of your investment and extends the life of your property. However, following a maintenance schedule also requires self-discipline, organization, and a willingness to invest further in the health and welfare of what you own.

Although most of us jump into planned maintenance with the best intentions, priorities change as time goes on. During the first 10,000 miles with a new car, we may manage to check all the items off the list, but then life gets in the way, the car keeps driving, and we forget. We may keep up with changing the oil every 6000 miles, but as far as checking the condition of the wheel bearings... worry doesn't set in until we hear funny noises.

The same habit can result in major repairs or replacements being required for roofs, furnaces, engines, or transmissions, long before they should have failed. Failing to pay attention to planned maintenance and inspection schedules can result in tremendously expensive and avoidable repairs, with replacements becoming necessary unexpectedly. It's vital for owners and facility managers of commercial buildings to understand and appreciate the need for routine planned maintenance on all building systems, including the HVAC system.

The Business Case for Planned HVAC Maintenance

Following a planned maintenance schedule designed for your building's unique system can save your company tens of thousands of dollars annually, and can extend the life of your investment by many years.

IMPROVED ENERGY EFFICIENCY

With energy prices always fluctuating, but remaining a significant portion of every commercial building's expense budget, improved energy efficiency is a huge benefit. Combined with an increasing public desire for companies to take on environmental responsibility, the need to reduce energy usage and create a more sustainable program only increases.

Planned HVAC maintenance can ensure that every system component is running at maximum efficiency and that aging or faulty parts are replaced before causing the entire system to waste energy.

Following a planned maintenance and inspection schedule of a building's HVAC system delivers exceptional business benefits that can be directly traced to the bottom line, including:

- Protects the value of the equipment
- Improves the value of the property
- Reduces unnecessary repair and replacements costs
- Improves energy efficiency
- Reduces costly downtime
- Improves overall performance
- Improves system reliability

EXPANDED EQUIPMENT LIFESPAN

With major commercial HVAC components like chillers and boilers costing tens of thousands of dollars and retrofit projects requiring hundreds of thousands, the ability to extend the life of the HVAC system by 2, 4, or 6 years can amount to tremendous bottom-line gains and a more proactive approach to capital investment in your HVAC system.

Planned maintenance can ensure that operational components are kept clean and running smoothly, and can identify parts that need to be replaced or upgraded to keep the entire system running as well as possible. This reduces strain on the system, extending its lifespan by years.

HEIGHTENED SAFETY AND PRODUCTIVITY

A well-maintained HVAC system running in top form creates the optimal working environment for equipment and employees. Both from a comfort and a safety standpoint, a properly heated or cooled internal environment allows employees to work productively throughout the workday. Many computer components and machines also require an optimal temperature and humidity level to function properly. A properly tuned HVAC system helps to protect these valuable investments.

Planned HVAC maintenance can ensure a clean, safe, and comfortable environment is maintained throughout the facility, boosting productivity, efficiency, and the lifespan of equipment.

For all these reasons and many more, a commitment to planned maintenance makes excellent business sense for any commercial building owner or facility manager wishing to boost profit for the company.

So let's dig deeper into what exactly needs to be considered when setting up a planned maintenance schedule.

Seasonal Inspections for Planned HVAC Maintenance

Maintaining a commercial HVAC system is an ongoing job since most facilities need to run their systems to some extent 24/7/365. For mission critical applications - such as data centers or server farms - the maintenance schedule is often more aggressive than what is outlined below. However, even the simplest systems require attention every quarter, aligning and realigning with changes in usage patterns for that space and/or location.

The time frames here are approximate and based primarily on the Chicago-area climate.

SPRING INSPECTION (MAY OR JUNE)

Before the heaviest part of the cooling season hits, it's important to have all cooling-related components in the system inspected, cleaned, and maintained to ensure energy efficiency and high performance when heavy air conditioning usage begins.

In Chicago, peak temperatures usually occur between July and September, so this inspection and maintenance should occur no later than June.

SUMMER CHECK-UP (JULY OR AUGUST)

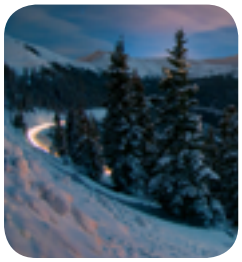
A second, less intensive check-up should be scheduled for the peak of the cooling season. This operational inspection will focus on verifying that parts that passed inspection in the spring are holding up as expected and that overall performance is within energy efficiency parameters.

As needed, controls and control software should be fine-tuned at this point to improve efficiency.

AUTUMN INSPECTION (OCTOBER OR NOVEMBER)

As we head into the winter, a full-scale inspection and evaluation of the heating system should be handled before temperatures start to plummet. Just like the spring inspection, the purpose is to test and evaluate heating system components to ensure they are up to the task of carrying the energy burden during the peak output of the heating system.

Since the coldest temperatures in Chicago are historically from December through March, this inspection should occur no later than November.



WINTER CHECK-UP (JANUARY OR FEBRUARY)

The purpose of this less intensive inspection is to confirm that the heating system is operating efficiently and performing optimally during the coldest part of the year.

While cleaning, repair, and replacement of worn components may be necessary during this period, the focus will likely be on fine tuning controls and boosting efficiency based on actual usage on a month-over-month basis.

What is Involved in a Visual Inspection?

Both the larger scale pre-season inspections in the spring and fall, as well as the operational inspections during the heating and cooling seasons require at least a visual inspection of these system components:

- ✓ Heating Sections
- ✓ Condensate Drains & Pans
- ✓ Bearings
- ✓ Flame Composition
- ✓ Spray Nozzles & Pans
- ✓ Crank Case Heaters
- ✓ Igniter & Flame Assembly
- ✓ Fan Assemblies
- ✓ Heat Exchanger
- ✓ Belts & Sheaves
- ✓ Compressor Sections
- ✓ Condensing Sections
- ✓ Motor Mounts & Vibration Pads
- ✓ Heating & Cooling Coils
- ✓ Humidifiers & Strainers
- ✓ Filter Media & Racks
- ✓ Seals & Packing
- ✓ Sight Glass Condition
- ✓ Electrical Connections & Contactors

In all cases, it's important to inspect the component for signs of wear, lubrication needs, and perform any necessary cleaning or sanitizing to improve function or safety.

What is Involved in Testing and Evaluating HVAC Components?

Another important aspect of seasonal inspections for planned maintenance involves testing electrical and mechanical components using various instruments to determine how efficiently they are functioning and if there is room for improvement.

The following tests must be regularly performed:

- ✓ Water Flows
- ✓ Pressures & Temperatures
- ✓ Flow Switch Operations
- ✓ Outside Air Intakes
- ✓ Control Interlocks
- ✓ Refrigerant Pump Down
- ✓ Flue Stack Assembly
- ✓ Lubrication Requirements
- ✓ Damper Operations
- ✓ External Interlocks
- ✓ Starter Operations
- ✓ Motor Voltage & Amperage
- ✓ Oil Sump Heaters & Temperatures
- ✓ Refrigerant Charges
- ✓ Alignment On Couplings
- ✓ System(s) Leaks
- ✓ Motor Operating Conditions
- ✓ Oil & Fluid Levels
- ✓ Suction & Discharge Pressures

In combination with a visual inspection of all key components, these tests can ferret out parts that need tuning or replacement, and controls that could use calibration or adjustment.

As is the case with many of the standard maintenance tasks recommended for your home or car, handling these visual inspections and tests - as well as making any needed repairs or replacements - requires a level of in-depth knowledge and experience to yield the best results. While it's possible and beneficial for the average building maintenance crew to handle some aspects of seasonal inspections, it could be costly to rely exclusively on untrained or inexperienced personnel when dealing with expensive HVAC equipment.
In many cases, the smartest choice is to work with dedicated HVAC maintenance technicians who know your system inside and out.

For over 40 years, Midwest Mechanical has provided that high level of service for commercial building owners and facility managers across the Chicago area. If you're ready to move from DIY maintenance to a planned maintenance schedule with trained technicians dedicated to preserving the value of your equipment and improving your bottom-line, contact Midwest Mechanical.

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